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EUROPEAN PATENT APPLICATION

⑰ Application number: 84300689.1

⑮ Int. Cl.⁴: **A 61 F 2/60**

⑱ Date of filing: 03.02.84

⑲ Date of publication of application:
21.08.85 Bulletin 85/24

⑳ Designated Contracting States:
DE FR IT NL SE

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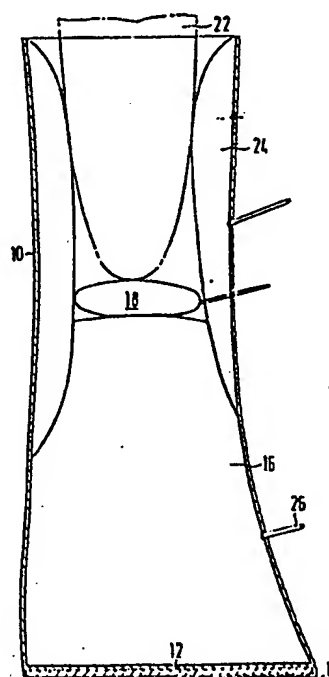
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⑸ An artificial leg for occasional use.

⑹ An inflatable lower limb prosthesis comprises an outer cover (10) of relatively inextensible material defining the shape of a leg prosthesis and having a pad (12) of rigid material at its lower end defining the shape of a foot. An inner member of independently inflatable compartments welded together comprises a shin compartment (16) contacting the rigid pad and of upwardly convergent profile, an inner spacer compartment (18) between the upper end of the shin compartment (16) and the patient's stump and an annular socket compartment (24) that surrounds the patient's stump and extends downwardly in overlapping relation around the upper end of the shin compartment (16) to resist bending of the prosthesis at the false joint at the patient's stump.



AN ARTIFICIAL LEG FOR OCCASIONAL USE

The present invention relates to an inflatable artificial leg.

The use of inflatable splints to treat lower limb
5 injury such as skiing accidents is described in UK Patent
Specifications Nos.970890, 1103181 and 1171361 and in USA
Re.26046. But the purpose of such splints when applied to
a lower limb is to immobilise it while the patient is
transported to hospital and they neither are nor are
10 intended as capable of supporting the weight of the
patient and assisting walking.

It is an object of the invention to provide a lower
limb prosthesis for occasional use by amputees eg. in
showers that can be collapsed into a very compact state.

15 The invention provides a lower limb prosthesis
comprising means defining a ground contacting lower
surface, inflatable stump support means extending upwardly
from the lower surface and inflatable socket means for
surrounding the stump and so connected to said support

means to provide stiff support between the stump and the ground.

The invention also provides an inflatable lower limb for use by amputees comprising: an outer cover of
5 relatively inextensible material defining the shape of the leg and having a pad of rigid material at its lower end defining the shape of the foot; and an inner member of independently inflatable compartments welded together comprising a shin compartment contacting the rigid pad and
10 being of upwardly convergent profile, an inner spacer compartment between the upper end of the shin compartment and the patient's stump and an annular socket compartment that surrounds the patient's stump and the shin compartment and extends downwardly in overlapping relation
15 around the upper end of the shin compartment to resist bending of the limb at the false joint at the patient's stump.

The inner member and the outer cover are both of waterproof material and it is envisaged that one main use
20 of the lower limb will be when the wearer wishes to take a shower. Because it is wholly of flexible plastics sheet or textile material except for the rigid pad, it may be rolled up into a very compact form and can be readily packed into the wearer's luggage.

25 An embodiment of the invention will now be described by way of example only with reference to the accompanying drawing which is a diagrammatic vertical sectional view of an inflatable artificial leg.

In the drawing, the shape of the leg is defined by
30 an outer casing 10 of relatively inextensible material such as a polyurethane coated woven nylon fabric. At its lower end is a base pad 12 of rigid material sealed into a water-tight pocket bonded to the outer casing 10. A sole 14 of rubberised anti-skid sheet material is bonded to the
35 base of the outer cover.

In outer casing 10 fits an inflatable inner member formed of three independent compartments welded together.

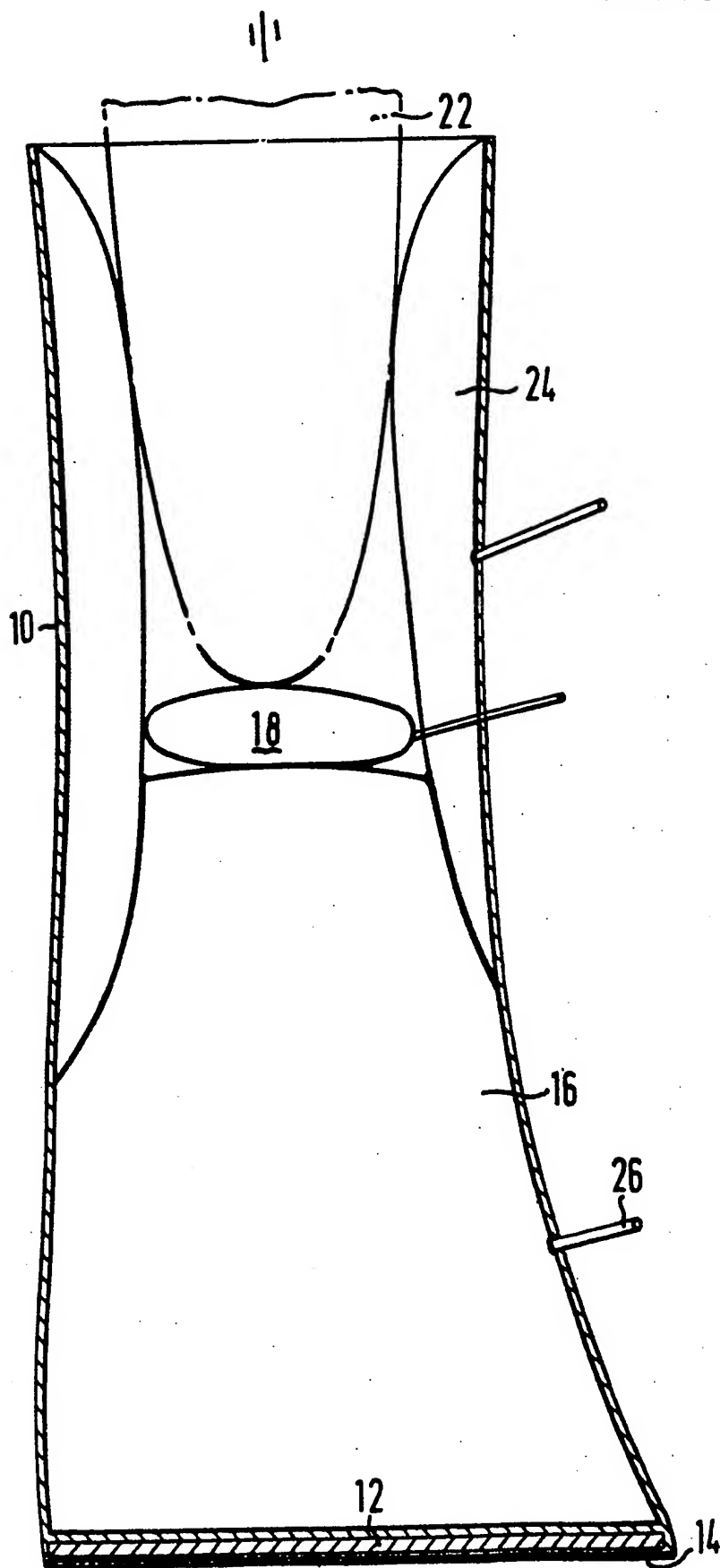
A shin compartment 16 fits immediately above the baseplate 12 and tapers inwardly as shown. Above the shin compartment is an inner spacer 18 that may be inflated to a desired height appropriate to the length of the wearer's stump 22. An annular socket compartment 24 surrounds the stump 22, the inner spacer 18 and the upper end of the shin compartment which it overlaps as shown. The reason for this overlap is to avoid the effects of the false joint between the inflatable leg and the wearer's stump which if insufficiently supported by a rigid tube structure is prone to collapse.

In use the wearer first inflates the shin compartment 16 through tube 26. Then he inserts his stump into the socket compartment 24 and inflates the inner spacer compartment until it reaches the required height to support his stump. Finally he inflates the socket compartment 24. After use, air is expelled from the three compartments and the leg can be rolled up about the base pad 12 to a small size that is convenient for packing.

CLAIMS:

1. A lower limb prosthesis comprising means defining a ground contacting lower surface (12, 14), inflatable stump support means (16) extending upwardly from the lower surface (12, 14) and inflatable socket means (24) for surrounding the stump and so connected to said support means (16) to provide stiff support between the stump and the ground.
2. A lower limb prosthesis according to Claim 1 comprising means defining an inflatable shin member (16) and means defining an inflatable stump socket (24).
3. An inflatable lower limb for use by amputees comprising: an outer cover (10) of relatively inextensible material defining the shape of the leg and having a pad (12) of rigid material at its lower end defining the shape of the foot; and an inner member of independently inflatable compartments welded together comprising a shin compartment (16) contacting the rigid pad and being of upwardly convergent profile, an inner spacer compartment (18) between the upper end of the shin compartment (16) and the patient's stump and an annular socket compartment (24) that surrounds the patient's stump and the shin compartment (16) and extends downwardly in overlapping relation around the upper end of the shin compartment (16) to resist bending of the limb at the false joint at the patient's stump.

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| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
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| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int. Cl. 7) |
| X | GB-A-2 064 331 (SAUNDERS) * abstract; figures; page 1, line 79 - page 2, line 36 * | 1,2 | A 61 F 2/60 |
| A | --- DE-A-2 026 825 (COSMEVO LTD.) * claims 1,8,9; figure 6; page 6, line 25 - page 7, line 9 * | 1-3 | |
| E | --- GB-A-2 124 493 (HANGER & CO.) * whole document * ----- | 1-3 | |
| | | | TECHNICAL FIELDS SEARCHED (Int. Cl. 7) |
| | | | A 61 F |
| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 03-10-1984 | Examiner STEENBAKKER J. |
| CATEGORY OF CITED DOCUMENTS | | | |
| X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document | | T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | |